

LISTING OF THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) An ~~An~~ An O-substituted hydroxylamine free base composition having the following general formula:



wherein X is hydrogen or an alkyl; and R<sup>1</sup> is an unsubstituted or substituted phenyl, thienyl, furanyl, pyrrolyl or -CR<sup>2</sup>=CR<sup>3</sup>R<sup>4</sup>; wherein R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are hydrogen, halogen or alkyl; and

wherein said O-substituted hydroxylamine exhibits at least one property selected from the group consisting of:

essentially free of hydroxylamine;

essentially free of any solvent;

a water content of between about 0% to 90% by weight; and

a high strength (as measured by mole of said O-substituted hydroxylamine per gram of sample) of between about 0.5 to 3.3-fold as much as a 40% O-substituted hydroxylamine salt solution, by weight.

2. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 1, wherein said O-substituted hydroxylamine is at least one isomer selected from the group consisting of *cis*, *trans* and a mixture thereof.
3. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 1, wherein said O-substituted hydroxylamine has at least one additional property selected from the group consisting of:

a purity of between about 98% to 100%, based on gas chromatographic area;  
and

a purity drop of less than about 1.2% after 78 days at 40°C when said O-substituted hydroxylamine has a concentration of about 85% in water, based on gas chromatographic area.

4. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 1, wherein said O-substituted hydroxylamine is O-(3-chloro-2-propenyl)hydroxylamine.
5. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 1, wherein said O-substituted hydroxylamine is formed by the following steps comprising:
  - a. optionally admixing an organic solvent with a solution of O-substituted hydroxylamine salt to form at least an aqueous phase and extracting impurities from said aqueous phase;
  - b. optionally stripping residual organic solvents from said aqueous phase to form an aqueous-enriched phase;
  - c. adjusting the pH of said aqueous-enriched phase to a pH of at least about 3.5, thereby forming an organic-enriched stream and an aqueous phase stream; and
  - d. separating said O-substituted hydroxylamine from said organic-enriched stream and/or said aqueous phase stream.
6. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 5, wherein said organic solvent used in extraction step (a) is selected from the group consisting of: aliphatic compounds, aromatic compounds, and alicyclic compounds.
7. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 5, wherein the extraction step (a) is conducted at a pH of about 7 or less.

8. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 7, wherein said pH is less than about 4.
9. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 5, wherein the extracting step (a) is conducted at a temperature between about -10 to 97°C.
10. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 5, wherein said O-substituted hydroxylamine salt is O-substituted hydroxylamine hydrochloride.
11. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 10, wherein said O-substituted hydroxylamine hydrochloride is O-(3-chloro-2-propenyl)hydroxylamine hydrochloride.
12. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 5, wherein the extracting step (a) is conducted at a pressure between about 0 to 15 atmospheric pressure (atm).
13. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 5, wherein said separating step (d) comprises at least one step selected from the group consisting of:
  - (i) separating said organic-enriched stream from said aqueous phase stream, wherein said organic-enriched stream comprises said O-substituted hydroxylamine;
  - (ii) distilling said aqueous stream, wherein said O-substituted hydroxylamine is taken overhead;
  - (iii) optionally, distilling said organic-enriched stream and said aqueous phase stream from the pH adjustment step (c),

wherein said O-substituted hydroxylamine is taken overhead;  
and

- (iv) optionally, fractionally distilling said organic-enriched stream,  
wherein a substantially solvent-free O-substituted  
hydroxylamine is taken overhead.

14. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 13, wherein said phase separation step (i) is conducted at a pH of between about 3.5 to 14.
15. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 14, wherein the pH during said phase separation step (i) is between about 4.5 to 13.
16. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 13, wherein the phase separation step (i) is conducted at a temperature of between about  $-10^{\circ}\text{C}$  to  $97^{\circ}\text{C}$ .
17. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 13, wherein the phase separation step (i) is conducted at a pressure between about 0 to 15 atm.
18. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 13, wherein said distilling step (ii) is conducted via distillation.
19. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 18, wherein said distillation comprises at least a column, a condenser, a reflux ratio controller, and a receiver.
20. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 19, wherein said column comprises about 0 to 35 theoretical plates.

21. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 20, wherein column comprises about 5 to 15 theoretical plates.
22. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 13, wherein said distilling step (ii) is conducted at a pressure between about 5 to 800 torr.
23. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 13, further comprising the addition of water during said distilling step (ii).
24. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 13, wherein said distilling step (iii) is conducted at a pressure between about 5 to 800 torr.
25. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 13, wherein said distilling step (iv) is conducted at a pressure between about 0 to 100 torr.
26. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 5, wherein said aqueous-enriched phase is adjusted to a pH between about 3.5 to 14.
27. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 26, wherein said pH of said aqueous-enriched phase is adjusted to between about 4.5 to 13.
28. (Currently amended) The composition~~O-substituted hydroxylamine~~ according to claim 27, wherein said pH of said aqueous-enriched phase is adjusted to between about 6.5 to 13.

29. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 5, wherein said pH adjusting step (c) is conducted at a temperature between about  $-10^{\circ}\text{C}$  to  $97^{\circ}\text{C}$ .

30. through 97. (Cancelled).

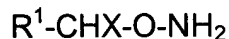
98. (Currently amended) An O-substituted hydroxylamine free base composition having the following general formula:



wherein X is hydrogen or an alkyl; and  $\text{R}^1$  is an unsubstituted or substituted phenyl, thienyl, furanyl, pyrrolyl or  $-\text{CR}^2=\text{CR}^3\text{R}^4$ ; wherein  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  are hydrogen, halogen or alkyl; and

wherein said O-substituted hydroxylamine is essentially free of hydroxylamine.

99. (Currently amended) An O-substituted hydroxylamine free base composition having the following general formula:



wherein X is hydrogen or an alkyl; and  $\text{R}^1$  is an unsubstituted or substituted phenyl, thienyl, furanyl, pyrrolyl or  $-\text{CR}^2=\text{CR}^3\text{R}^4$ ; wherein  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  are hydrogen, halogen or alkyl; and

wherein said O-substituted hydroxylamine is essentially free of any solvent.

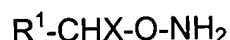
100. (Currently amended) An O-substituted hydroxylamine free base composition having the following general formula:



wherein X is hydrogen or an alkyl; and R<sup>1</sup> is an unsubstituted or substituted phenyl, thienyl, furanyl, pyrrolyl or  $-CR^2=CR^3R^4$ ; wherein R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are hydrogen, halogen or alkyl; and

wherein said O-substituted hydroxylamine has a water content of between about 0% to 90% by weight.

101. (Currently amended) An O-substituted hydroxylamine free base composition having the following general formula:



wherein X is hydrogen or an alkyl; and R<sup>1</sup> is an unsubstituted or substituted phenyl, thienyl, furanyl, pyrrolyl or  $-CR^2=CR^3R^4$ ; wherein R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are hydrogen, halogen or alkyl; and

wherein said O-substituted hydroxylamine has a high strength (as measured by mole of said O-substituted hydroxylamine per gram of sample) of between about 0.5 to 3.3-fold as much as a 40% O-substituted hydroxylamine salt solution, by weight.

102. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 3, wherein said O-substituted hydroxylamine is O-(3-chloro-2-propenyl)hydroxylamine.

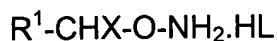
103. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 5, wherein said aqueous-enriched phase in step (c) is an O-substituted hydroxylamine salt.

104. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 103, wherein said O-substituted hydroxylamine salt is O-substituted hydroxylamine hydrochloride.

105. (Currently amended) The composition ~~O-substituted hydroxylamine~~ according to claim 104, wherein said O-substituted hydroxylamine hydrochloride is O-(3-chloro-2-propenyl)hydroxylamine hydrochloride.

106. through 121. (Cancelled).

122. (Currently amended) An O-substituted hydroxylamine salt composition having the following general formula:



wherein L is a halogen or hydrogensulfate; X is hydrogen or alkyl; R<sup>1</sup> is unsubstituted or substituted phenyl, thienyl, furanyl, pyrrolyl or  $-\text{CR}^2=\text{CR}^3\text{R}^4$ ; wherein R<sup>2</sup>, R<sup>3</sup>, and R<sup>4</sup> are each hydrogen, halogen or alkyl; and

wherein said O-substituted hydroxylamine salt is essentially free of hydroxylamine.

123. (Currently amended) The O-substituted hydroxylamine salt composition according to claim 122, wherein said O-substituted hydroxylamine salt is at least one isomer selected from the group consisting of *cis*, *trans* and a mixture thereof.

124. (Currently amended) The O-substituted hydroxylamine salt composition according to claim 122, wherein said O-substituted hydroxylamine salt is O-(3-chloro-2-propenyl)hydroxylamine hydrochloride.

125. (Currently amended) The O-substituted hydroxylamine salt composition according to claim 122, wherein said O-substituted hydroxylamine salt is formed by the following steps comprising:



- a. optionally admixing an organic solvent with an hydroxylamine-containing O-substituted hydroxylamine salt to form at least an aqueous phase and extracting impurities from said aqueous phase;
  - b. optionally stripping residual organic solvents from said aqueous phase to form an aqueous-enriched phase;
  - c. adjusting the pH of said aqueous-enriched phase to a pH of at least about 3.5, thereby forming an organic-enriched stream and an aqueous phase stream;
  - d. separating said O-substituted hydroxylamine from said organic-enriched stream and/or said aqueous phase stream; and
  - e. reacidifying said O-substituted hydroxylamine, thereby forming said O-substituted hydroxylamine salt which is essentially free of hydroxylamine.
126. (Currently amended) The O-substituted hydroxylamine salt composition according to claim 125, wherein step (e) is conducted at a temperature of about 75°C or less.
127. (Currently amended) The O-substituted hydroxylamine salt composition according to claim 126, wherein step (e) is conducted at a temperature of about 65°C or less.
128. through 147. (Cancelled).